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KISTLER-MORSE
Measure of Success

PROFIBUS Interface for:

ultra-*wave*™ Ultrasonic Level System
Sonologic II Ultrasonic Level System
and Weigh II Weighing System

Installation & Operation Manual

CONTENTS

1. Introduction 1

The ultra-wave™, Sonologic II, and Weigh II Profibus-DP Slave 1
The Kistler-Morse Profibus-DP Card 2

2. Installing Hardware 1

Wiring 1
Termination 2
LED Indicators 2
Sonologic II Addressing 3
ultra-wave™ Addressing 4
Weigh II Addressing 5

3. Programming 1

Introduction 1
Interface Method 2
ultra-wave™/ Sonologic II Data Types 3
Weigh II Data Tyes 11

Appendix A. Kistler-Morse Service and Warranty 1

Product Warranty 1
Service 1
Return Material Authorization 2
Address and Telephone Numbers 2

Appendix B. Technical Drawings 1

1. INTRODUCTION

This manual covers the installation, setup, and programming for the ultra-wave™, Sonologic II or Weigh II Profibus-DP slave. This slave complies to the Profibus Standard EN 50170. EN 50170 is an open, vendor-independent communic- ation standard, which defines the technical and functional characteristics of a serial Fieldbus. It interconnects distributed digital field devices in the low to medium performance range.

Profibus-DP (Decentralized Periphery) is the Profibus option that provides the optimum combination of data throughput, ease of installation and service, diagnostic capabilities, and error-free transmission. This option is dedicated to time-critical communication between automation systems and distributed peripherals such as the ultra-wave™ signal processor or Sonologic II or Weigh II.

In a Profibus network, master devices control the bus and are called “active stations.” A master can transfer messages without remote request. Slave devices are simple peripheral devices, such as sensors, actuators, and transmitters. They are called “passive stations” and have no bus access rights. For example, they may only acknowledge received messages, or at the request of a master, transmit messages to that master.

THE ULTRA-WAVETM SONOLOGIC II WEIGH II PROFIBUS-DP SLAVE

The ultra-wave™ or Sonologic II monitors up to a total of 16 Sonocell transducers of various frequencies, accommodating multiple vessels of different heights and shapes for level, flow, and DLD applications.

The Weigh II monitors up to a total of 4 vessels.The Kistler-Morse Profibus-DP Card

The ultra-wave™ /Sonologic II Profibus-DP slave includes a high-speed interface card using the Siemens SPC3 chip set and RS485 transmission technology. The bus structure permits the addition and removal of stations or step-by-step commissioning of the system. The card has the following capabilities and requirements:

- Supports the Profibus-DP (Decentralized Periphery) standard.
- Allows access to data, calibration parameters, and tuning parameters from the Programmable Logic Controller (PLC), or Personal Computer (PC).
- Allows setup and tuning parameters to be uploaded/downloaded for system backup archival.
- Offers a selection of commands and summaries for best meeting operational requirements.
- Allows remote programming, setup, calibration, tuning, diagnosis, and archival via the Profibus network.

THE KISTLER-MORSE PROFUBUS-DP CARD

The ultra-wave™ /Sonologic II/Weigh II Profibus-DP slave includes a high-speed interface card using the Siemens SPC3 chip set and RS485 transmission technology. The bus structure permits the addition and removal of stations or step-by-step commissioning of the system. The card has the following capabilities and requirements:

ultra-wave™ Compatibility	EEPROM must be Rev. P or higher.
SonoII Compatibility	EEPROM must be Rev. P or higher.
Transmission Speed	Between 9.6 kbit/sec. and 12 Mbit/sec. The ultra-wave™/ Sonologic II/Weigh II Profibus DP card will auto-select the speed of the bus.
Network Topology	Linear bus, active bus termination on both ends, stub lines only permitted for baud rates of ≤ 1.5 Mbit/sec. (Termination not supplied)
Medium	Shielded twisted-pair cable. Siemens 6XV1-830-OAH10, Belden 3079A or equivalent
Number of Stations	126 stations on one bus.
Connector	9-pin D-sub plug connector. Siemens Bus Connector 6ES7-972-OBA11-OXAO or equivalent See **FIGURE 1. Seimens Bus Connector**
Cable Pin Definition	D-sub shell – Ground (outerbraided shield) Pin 3 – Signal “B1/B2” (Red) Pin 4 – RTS Signal Pin 5 – Data ground Pin 6 – 5VDC Pin 8 – Signal “A1/A2” (Green)

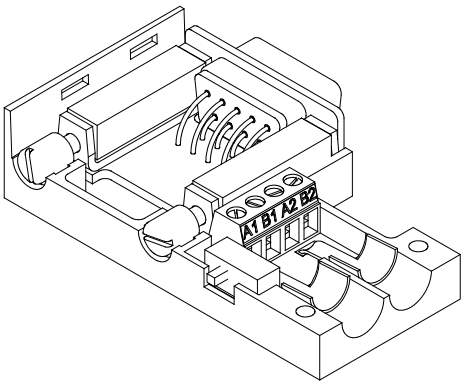
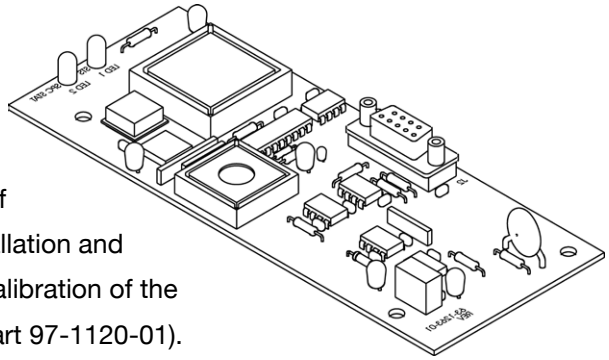


FIGURE 1. Seimens Bus Connector

BAUDE RATES	9.6k-167.5k Bd	500k Bd	1.5m Bd	3-12m Bd
Per segment	1000m/3937ft	400m/1312ft	200m/656ft	100m/328ft
With repeater	10,000m/3937ft	400m/1312ft	200m/656ft	100m/328ft
Per fiber optic segment	15km/9 mi	15km/9 mi	15km/9 mi	15km/9 mi
Total with fiber optic	>200km/124 mi	>200km/124 mi	>200km/124 mi	130km/80 mi

2. INSTALLING HARDWARE

ultra-*wave*™ or SonoII Profibus-DP Card



Note: For installation, setup, and calibration of the Sonologic II, refer to the Sonologic II and Sonocel Installation and Operation Manual (part 97-1119-01). For installation, setup, and calibration of the ultra-wave™, refer to the ultra-wave™ Ultrasonic System Installation and Operation Manual (part 97-1163-01). For Installation, setup, and calibration of the Weigh Ii, refer to the Weigh II Installation and Operation Manual (part 97-1120-01).

WIRING

A shielded twisted-pair cable generally connects Profibus-DP slaves. The shield has to be connected to the protective housing of the connector, which is then brought to ground via the connection on the device.

1. Connect the wires to the Seimens Bus Connector: When connecting the wires to the Seimens Bus connector, care must be taken that the shield and wires are properly installed. The two wires are usually color-coded red and green. Red is for the B Transmit and Receive Line (B1, B2), and green is for the A Transmit and Receive Line (A1, A2). See **FIGURE 1-1**.
   It is very important that the selection for A and B Lines are used consistently throughout the network to avoid improper operation. This is the most common connection mistake in the field.
2. Connect the cable and connector to the Profibus- DP card
   a. Cut a hole in the bottom of the box as required to fit the Profibus cable and Seimens Bus connector.
   b. Run the cable with the connector through the hole and push the connector into J2 (9-pin D-sub male Siemens Bus Connector 6ES7-972-OBA11-OXAO or equivalent).

TERMINATION

Each Profibus segment needs to be terminated at the beginning and end of a segment. The ideal case is to have one end of the network connected to the master with the termination on.

Preferably, the master device is installed as the start of the network and as a termination point. If repeaters are used, the repeater is at the start and end of the network and is the termination point as well. LED Indicators

LED INDICATORS

The Red and Green LED lights on the DP-Slave indicate the status of the Profibus connection. The Red LED is CR1 STS and the Green LED is CR2 SPC STAT.

Possible status indications: Table 2-1:

GREEN	RED	Meaning
ON	Flash	Profibus connection is active. Red LED flashes to indicate data flow.
ON	OFF	Connection active with DP-Master, but DP-Slave is not transferring data. Check for Rev. P or higher on Sono II.
OFF	OFF	DP-Slave is not powered or hardware failure.
OFF	1x Flash	DP-Slave is waiting to autobaud. Missing or bad connection with DP-Master. Check wiring.
OFF	2x Flash	DP-Slave is waiting to be addressed. Check DP-Master in config software and verify it matches DP-Slave address.
OFF	3x Flash	DP-Slave has bad parameter or has lost connection. Check the GSE file was properly imported and used to configure the DP-Slave.
OFF	Other Flash	DP-Slave hardware had an error initializing.

FIGURE 1. Output Word

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